#### Amendments to the Claims:

This listing of claims will replace all prior version, and listings, of claims in the application. Where claims have been amended and/or canceled, such amendments and/or cancellations are done without prejudice and/or waiver and/or disclaimer to the claimed and/or disclosed subject matter, and the applicant and/or assignee reserves the right to claim this subject matter and/or other disclosed subject matter in a continuing application.

# Listing of the claims:

- 1. (Original) A method of operating a radio frequency (RF) signal processing circuit comprising the steps of: a. establishing a wireless communications channel between a first access point and a second access point in accordance with a communications protocol; b. monitoring transmission conditions in said wireless communications channel, including an available data rate, to determine whether a first transmission mode or a second transmission mode should be used; c. performing a first set of signal processing operations at said first access point on a single received RF signal from said second access point when said first transmission mode is used; d. performing a second set of signal processing operations at said first access point on M independent RF received signals from said second access point when said second mode of operation is used; wherein data transmissions between said first access point and said second access point are compliant with said communications protocol in both said first transmission mode and said second transmission mode.
- 2. (Original)The method of claim 1, wherein said second mode is automatically enabled when transmission conditions indicate that a data rate in said channel has fallen below a predetermined threshold.

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3. (Original) The method of claim 1, wherein said second mode is automatically enabled when transmission conditions indicate that a data rate in said channel is to be enhanced above a nominal operating rate.

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- 4. (Original) The method of claim 1, wherein said communications protocol is based on an 802.11x communications protocol.
- 5. (Original) The method of claim 1 wherein said second set of signal processing operations introduce a latency, and said latency is compensated using a dummy data response to maintain compatibility with said communications protocol.
- 6. (Original) The method of claim 1 wherein said second set of signal processing operations is performed by a multiple-in, multiple out (MIMO) processor.
- 7. (Original) A method of performing multi-antenna radio frequency (RF) communications comprising the steps of: performing data transmissions during a first operating mode in a channel at a first access point using a first baseband processor; performing data transmissions during a second operating mode in said channel at said first access point using a multi-antenna signal processing circuit, including the following steps: (a) receiving M independent RF modulated input signals from a second access point; (b) processing said M independent RF modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by said second access point; wherein said first operating mode and said second operating mode are automatically selected based on a transmission condition in said channel.
- 8. (Original The method of claim 7, wherein said multi-antenna signal processing circuit processes at least 4 separate input signals.

- 9. (Original) The method of claim 7, further including a step of using a channel mixing matrix to perform an operation that computes a recovered data signal x as follows: x=b1\*y1+b2\*y2+x0 where b1 and b2 are equalization coefficients computed by said multi-antenna signal processing circuit, y1 and y2 are received data from separate baseband channels, and x0 is a recovered signal from an adjacent channel.
- 10. (Original) The method of claim 7, wherein space division multiple access is realized by separating different RF signals from different directions simultaneously in the multi-antenna signal processing circuit.
- 11. (Original) The method of claim 7, wherein said multi-antenna signal processing circuit extends a data transmission range achieved by said baseband processor circuit between said first access point and said second access point.
- 12. (Original) The method of claim 7, wherein said multi-antenna signal processing circuit increases a data transmission rate achieved by said baseband processor circuit between said first access point and said second access point.
- 13. (Original) The method of claim 7, wherein said multi-antenna signal processing circuit transmits M separate data signals to said second access point.
- 14. (Original) The method of claim 13, wherein a localized encryption is achieved for said second access point by independently controlling said M separate transmission signals.
- 15. (Original) A method of transmitting and receiving data in a 802.11x compatible communications channel using a plurality of radio frequency (RF) received signals comprising the steps of: (a) operating a first baseband processor to handle data transmissions in a first mode between a first access point

and a second access point in accordance with an 802.11x protocol, based on a first channel transmission condition; (b) operating a multi-signal processor to handle data transmissions in a second mode between said first access point and said second access point in accordance with an 802.11x protocol under a second channel transmission condition, during which time said multi-signal processor: i) receives M independent RF modulated input signals from said second access point; ii) processes said M independent RF modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by said second access point; (c) transmiting an RF modulated signal to said second access point using a point coordination function (PCF) mode associated with said 802.11x protocol so as to maintain timing compatibility; wherein said multi-antenna signal processing circuit operates with a first baseband processor to receive and transmit RF signals in a channel between said first access point and said second access point.

- 16. (Original) The method of claim 15, wherein said multi-signal processor processes data using a high rate direct sequence spread spectrum (HR/DSSS) physical layer frame structure that has a preamble and header compatible with said 802.11x protocol.
- 17. (Original) The method of claim 16, wherein said header includes additional data to identify a high rate mode.
- 18. (Original) The method of claim 16, wherein said header includes additional data to identify a modulation format.
- 19. (Original) The method of claim 15, wherein said multi-signal processor generates a dummy response signal to said second access point to mask a latency associated with decoding a received data packet.

20. (Original) The method of claim 15, wherein said channel mixing matrix is blindly estimated using a Herault-Jutten network.

#### 21. (New) A method comprising:

establishing a communications channel between a first access point and a second access point;

monitoring transmission conditions in the communications channel;

determining whether a first transmission mode or a second transmission mode should be used;

performing a first set of signal processing operations at the first access point on a received signal from the second access point when the first transmission mode is used; and performing a second set of signal processing operations at the first access point on M independent received signals from the second access point when the second transmission mode is used.

# 22. (New) A method according to claim 21, further comprising:

automatically enabling the second mode when transmission conditions indicate that a data rate in the channel has fallen below a predetermined threshold.

#### 23. (New) A method according to claim 21, further comprising:

enabling the second mode when transmission conditions indicate that a data rate in the channel will be enhanced above a nominal operating rate.

### 24. (New) A method comprising:

point;

performing data transmissions during a first operating mode in a channel at a first access point; performing data transmissions during a second operating mode in the channel at a first access

condition in the channel.

receiving M independent modulated input signals from a second access point;

processing the M independent modulated input signals;

extracting N independent data signals transmitted by the second access point;

selecting the first operating mode and the second operating mode based on a transmission

- 25. (New) A method according to claim 24, further comprising separating signals from different directions simultaneously, or nearly simultaneously, in a multi-antenna signal processing circuit.
- 26. (New) A method of operating a selective wireless data processing system comprising:

  monitoring at least one channel condition between two or more wireless access points;

  determining whether a threshold has been met for noise, interference, frequency fading, data

  rate and/or operating range on at least one channel between two or more wireless access points;

  responding to channel conditions; and

  demodulating N separate data signals from M separate antennas simultaneously when channel

#### 27. (New) An apparatus comprising:

conditions reach the threshold.

means for establishing a communications channel between a first access point and a second access point;

means for monitoring transmission conditions in the communications channel;

means for determining whether a first transmission mode or a second transmission

mode should be used;

means for performing a first set of signal processing operations at the first access point on a received signal from the second access point when the first transmission mode is used; and

means for performing a second set of signal processing operations at the first access point on M independent received signals from the second access point when the second transmission mode is used.

# 28. (New) An apparatus according to claim 27, further comprising:

means for automatically enabling the second transmission mode when transmission conditions indicate that a data rate in the channel has fallen below a predetermined threshold.

# 29. (New) An apparatus according to claim 27, further comprising:

means for automatically enabling the second transmission mode when transmission conditions indicate that a data rate in the channel will be enhanced above a nominal operating rate.

# 30. (New) An apparatus comprising:

means for performing data transmissions during a first operating mode in a channel at a first access point;

means for performing data transmissions during a second operating mode in the channel at a first access point;

means for receiving M independent modulated input signals from a second access point; means for processing the M independent modulated input signals;

means for extracting N independent data signals transmitted by the second access point; means for selecting the first operating mode and the second operating mode based on a transmission condition in the channel.

31. (New) An apparatus according to claim 30, further comprising means for separating signals from different directions simultaneously, or nearly simultaneously, in a multi-antenna signal processing circuit.

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32. (New) An apparatus for operating a selective wireless data processing system comprising:

means for monitoring at least one channel condition between two or more wireless access
points;

means for determining whether a threshold has been met for noise, interference, frequency fading, data rate and/or operating range on at least one channel between two or more wireless access points;

means for responding to channel conditions; and

means for demodulating N separate data signals from M separate antennas simultaneously

when channel conditions reach the threshold.